

## CLAIMS

1. An arrangement for performing Viterbi decoding using a trellis, which arrangement comprises one or more ACS units, wherein connections between the inputs and outputs of the ACS units are implemented in such a manner that in calculating the consecutive metrics of the trellis, the calculated metrics of the previous stage of the trellis obtained from the outputs of the ACS units are directly connected to the inputs of the ACS units to be used in the calculation of the next stage of the trellis.
2. An arrangement as claimed in claim 1, wherein the arrangement comprises a memory for storing the calculation results and that the connections between the inputs and outputs of the ACS units are implemented in such a manner that  $\log_2 P$  path metrics are calculated per one memory read/write operation pair, wherein  $P$  is the number of data paths and  $Y$  is the number of branches from/to a state.
3. An arrangement as claimed in claim 1, wherein the ACS units are arranged to calculate  $Y$  ACS operations each, wherein  $Y$  is the number of branches from/to a state.
4. An arrangement as claimed in claim 1, wherein the arrangement comprises ACS banks made up of several ACS units.
5. An arrangement as claimed in claim 4, wherein the arrangement comprises ACS banks in a cascade connection.
6. An arrangement as claimed in claim 4, wherein the arrangement comprises ACS banks in a parallel connection.
7. An arrangement as claimed in claim 4, wherein the output of the ACS bank used in the calculation is connectable back to the input of the bank.
8. An arrangement as claimed in claim 4, wherein the ACS bank is implemented by program in a processor.
9. An arrangement as claimed in claim 8, wherein the processor is arranged to store the calculated metrics of a previous stage of the trellis into a register and to read the stored metrics from the register when calculating the metrics of the next stage of the trellis.
10. A method for performing Viterbi decoding using a trellis, comprising:  
calculating by one or more ACS units a set of consecutive metrics of the trellis using metrics of a previous stage of the trellis calculated by one or more ACS units directly as input.

11. A method as claimed in claim 10, further comprising storing the calculation results into a memory and

calculating  $\log_2 P$  path metrics per one memory read/write operation pair, wherein P is the number of data paths and Y is the number of branches  
5 from/to a state.

12. A method as claimed in claim 10, further comprising performing the calculation with ACS banks made up of several ACS units.

13. A method as claimed in claim 12, further comprising connecting the ACS banks used in the calculation in a cascade.

10 14. A method as claimed in claim 12, further comprising connecting the ACS banks used in the calculation in parallel.

15 15. A method as claimed in claim 12, further comprising performing the decoding by program.

16. A method as claimed in claim 15, further comprising

15 17. A method as claimed in claim 10, further comprising  
storing the calculated metrics in a register and  
reading the metrics of the previous stage from the register when the  
next stage of the trellis is calculated.

20 18. A method as claimed in claim 10, further comprising  
a) reading a set of metrics from a memory as inputs to the ACS  
units,

b) performing the calculation of the metrics of the next stage of the  
trellis in the ACS units,

c) taking the obtained metrics from the outputs of the ACS units to  
the inputs of the ACS units for calculating the next stage of the trellis,

25 repeating steps b) and c) one or more times.

19. A method as claimed in claim 17, further comprising  
repeating the steps b) and c) until  $\log_2 P$  path metrics are calcu-  
lated, wherein P is the number of data paths and Y is the number of branches  
from/to a state.